Glacier 3000, Diablerets-Gstaad, Switzerland

A NEW PERSPECTIVE

VERAS 9 | 7 | 5

PERFORMANCE DESIGN VERSATILITY

bernafon

Your hearing · Our passion

A new perspective

Sometimes a new idea or experience causes us to completely change our point of view. Bernafon is proud to offer a new perspective with Veras, our next generation of ChannelFree™ hearing systems.

Veras provides an ideal combination of proven technology and fitting versatility. With three complete instrument families, three levels of performance and three price categories, Veras is the hearing system with something for everyone. You will be pleased by the added value you find in Veras.

Veras

Performance, versatility and design

Veras offers the high-resolution performance of Bernafon's ChannelFree™ signal processing combined with advanced multi-environment technology and binaural communication between instruments. The result is a system that supplies excellent auditory scene fidelity and a natural hearing response.

Veras is extremely versatile with three technology levels, six instrument styles, multiple colors and several acoustic options. Wireless connectivity to sound sources, such as music players and cellular phones, makes Veras an important listening partner. Practical accessories are available to enhance listening to television and telephones.

Veras also introduces Bernafon's new instrument design, a very small and attractive Nano BTE. With so many choices, Veras makes it easy to find the right combination of features and fitting options to suit every preference.

Find a new perspective with Veras!

PERFORMANCE

DESIGN

VERSATILITY

VERAS

UNDERSTAND

ChannelFree™ signal processing

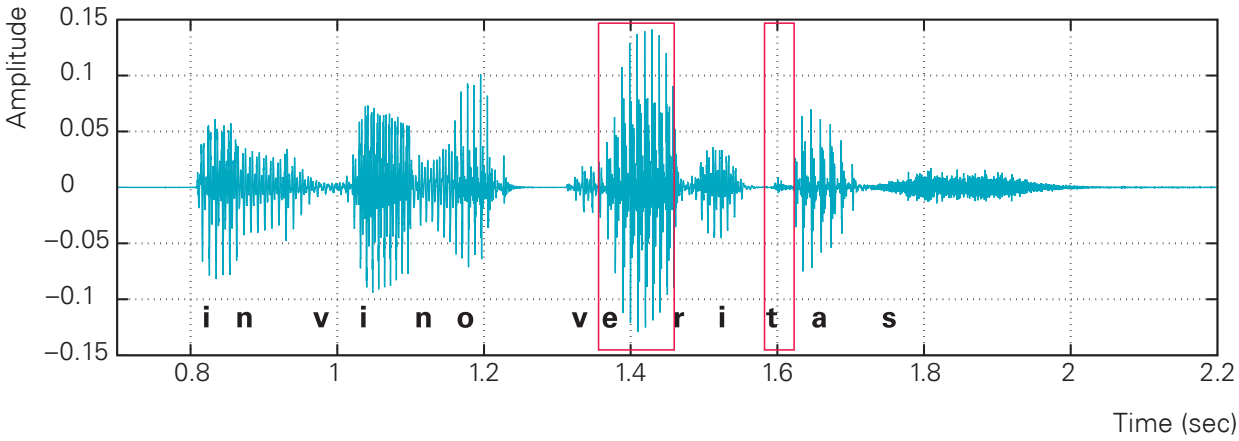
Bernafon's proprietary ChannelFree™ signal processing is the core technology in the Veras system. ChannelFree™ produces very accurate amplification, while staying true to the original signal.

ChannelFree™ signal processing adjusts the gain continuously to amplify each phoneme individually, without dividing the signal into channels or bands. The advantage is clear and natural sound without compromise.

Why are phonemes so important? Most processing systems operate at the syllabic level or slower. When processing speech, it is important to note that sentences remain at a relatively constant level, even for dynamic speakers. Individual words also remain at a relatively constant level and surprisingly, so do individual syllables. But when we analyze the differences between phonemes, the level changes dramatically from phoneme to phoneme. This is because some phonemes, like vowels, are vocalized and loud, while others, like high-frequency consonants, are unvoiced and soft. The softer phonemes are often missed by hearing-impaired persons, resulting in speech misunderstandings.

All hearing instruments use compression so that softer sounds are amplified more than louder sounds. With other hearing instruments, slower processing results in all parts of speech receiving the same amplification. ChannelFree™ analyzes the incoming signal level and adjusts the gain 20,000 times per second, accurately amplifying each individual phoneme.

The precise temporal resolution of ChannelFree™ signal processing means never missing valuable speech cues.



The level difference between the phonemes "e" and "t" is very large.
ChannelFree™ processing works rapidly to amplify each individual phoneme accurately.

ChannelFree™ signal processing

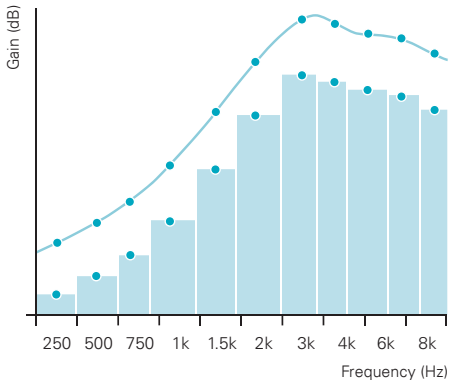
High-resolution amplification

The ability to resolve time-related events, like words, syllables, or phonemes, is known as temporal resolution. ChannelFree™ processing has the highest temporal resolution of any hearing system, and can correctly amplify the smallest parts of speech.

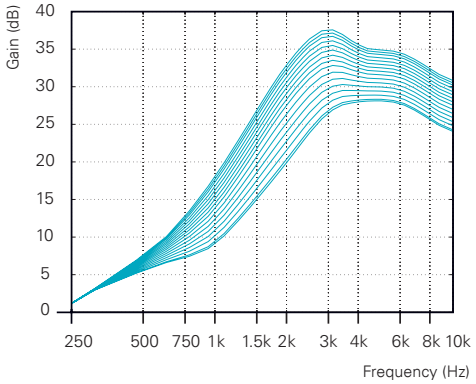
In addition to high temporal resolution, ChannelFree™ also has very high frequency resolution. This allows precise adjustments of the **frequency response** without affecting the neighboring frequencies. Channel-based systems only allow you to apply the same amplification to all frequencies within each channel. These channels can create a "stair-step" effect. ChannelFree™ draws a smooth curve between all the control points, providing smooth continuous gain across the frequency range.

ChannelFree™ DSP and adaptive technology – a winning partnership

The speed and resolution of ChannelFree™ signal processing is combined with advanced automatic features in Veras. Extended frequency bandwidth, binaural coordination between instruments, and sophisticated adaptive directionality and noise reduction systems all interact with ChannelFree™ processing. The entire system is precisely balanced to produce a truly authentic listening experience.



ChannelFree™ processing allows very precise independent gain adjustments, while keeping the response smooth across the frequency range.



ChannelFree™ DSP continuously adjusts gain at phonemic speed.

VERAS
PERFORM

PERFORMANCE

Auditory scene fidelity

The two ears work as a system, providing stereophonic sound everywhere we go. Our brains use the subtle differences in the timing and intensity of the sounds reaching each ear to localize sounds in space and interpret our surroundings.

Modern hearing instruments perform hundreds of complex operations moment by moment to adapt to the listening environment. With this degree of sophistication it is essential that the hearing instruments work together to provide an accurate picture of the auditory scene. Fortunately, advanced wireless communication between hearing instruments allows the ears to work together in a natural way once again.

Veras – the binaural advantage

Veras allows true binaural hearing with instant wireless communication between the instruments. This means the user receives an accurate representation of the spatial dynamics of the sound scene, in the same way a normal hearing person would. To achieve this, Veras combines several fast-acting advanced technologies that are perfectly coordinated to mimic the natural hearing process.

- **Binaural ChannelFree™ performance**
  With ChannelFree™ as a basis, Veras constantly analyzes the sound environment, amplifying every detail at the phonemic level. In combination with automatic technologies, this results in a very accurate amplification.

- **Binaural environment coordination**
  The multienvironment functionality in Veras incorporates rapid binaural detection and coordination of the amplification parameters in each ear. Interaural time and level differences between the ears are preserved to improve the user's ability to localize sounds in the constantly changing auditory scene. Coordinated shifts in the instrument parameters provide a smooth hearing response at all times.

- **Binaural wideband processing**
  There is much evidence that an extended bandwidth provides high-frequency cues that are vital to localization and to speech information. Veras amplifies up to 10 kHz, allowing full broadband benefits.

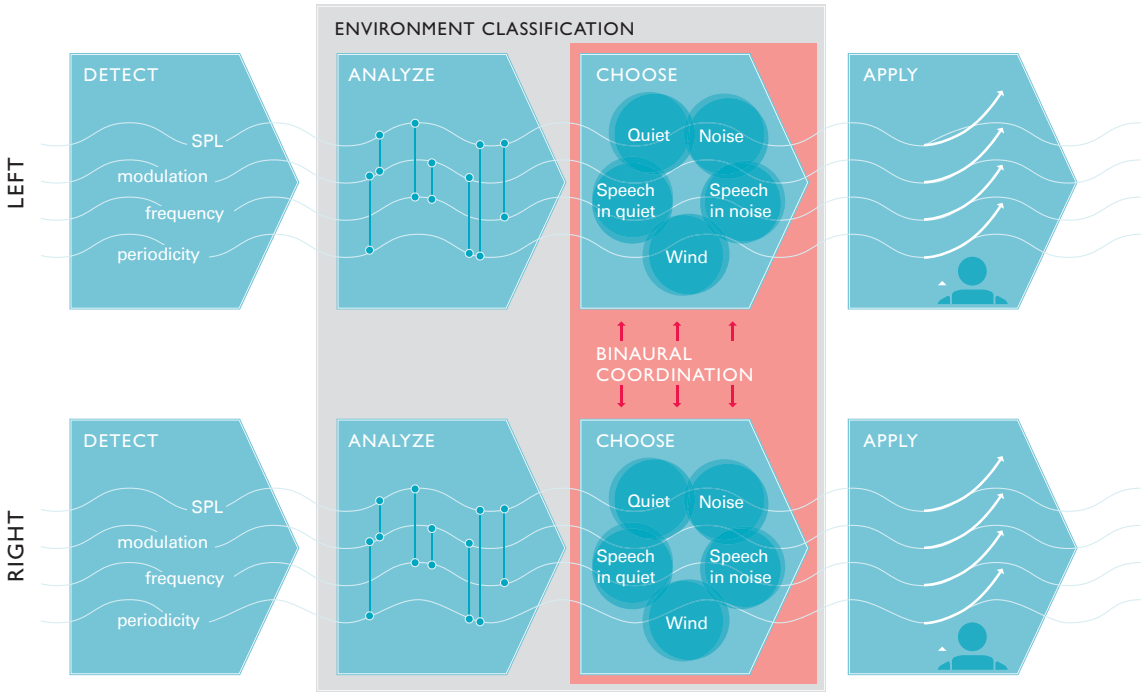
- **Binaural feedback cancellation**
  The binaural communication in Veras allows feedback detection to be coordinated between the instruments. This means that if a feedback-like signal is detected in both instruments at the same time, it will not be judged as feedback, avoiding unnecessary limiting of the signal.

VERAS
LOCALIZE

PERFORMANCE

PERFORMANCE

Signal processing in rapidly changing environments



Detection of signal characteristics

Analysis of changing signal patterns

Coordination of classification choice between left and right instruments

Individual amplification parameters applied to outgoing signal

A hearing system must be able to adjust smoothly to changes in the sound environment. The automatics are the brain of the hearing system, exerting dynamic control over every function. The multienvironment program in Veras utilizes the full power of the automatic system to adapt appropriately to every listening situation.

A sophisticated detection system constantly scans the sound scene and measures the characteristics of incoming signals from moment to moment. This information is analyzed and then binaurally coordinated to choose the most appropriate listening environment. This choice then determines the combination of special features that will operate on the signal in each instrument. Finally, individual amplification parameters are applied to the outgoing signal. Veras adapts seamlessly to every listening situation for an authentic hearing experience.

PERFORMANCE

Environment Optimizer

The multienvironment program in Veras matches incoming signals with one of four listening environment classifications. Although these four listening environments handle most everyday listening situations quite well, there are times when the client might benefit from enhancement of a particular environment.

The **Environment Optimizer** allows you to select one of the four listening environments and apply a special setting to this environment. The optimization is automatically activated whenever the chosen environment is detected.

Speech in noise

If this environment is chosen, Veras automatically fades to the optimized settings whenever speech is detected in the presence of loud background noise. Research shows that hearing-impaired people lose their ability to extract information from the temporal fine structure of speech (Moore, 2008). This means they rely heavily on the envelope of the speech signal. In the optimization mode, more envelope information is made more available to the listener.

Speech in quiet

The optimization for this environment slightly increases the amplification for speech signals when speech is detected in a quiet environment. This ensures that speech is emphasized and makes listening easier.

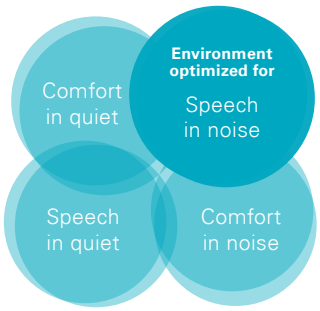
Comfort in noise

Most people don't like to listen to background noise. When this environment is chosen for optimization, the overall gain is slightly reduced to provide extra comfort in addition to the noise reduction system when noise is the only signal detected.

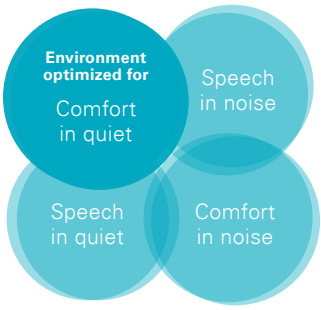
Comfort in quiet

Many people feel they don't need their instruments in a quiet environment and may switch them off. The optimization for comfort in quiet slightly reduces the gain when quiet environments are detected, for extra listening comfort.

With the Environment Optimizer, Veras can be further customized to your client's listening needs.



In this example, speech in noise has been selected for optimization.



In this example, comfort in quiet has been selected for optimization.

Moore BCJ. 2008. The choice of compression speed in hearing aids: theoretical and practical considerations and the role of individual differences. Trends in Amplif., 12(2):103–12.

Natural comfort

The ideal hearing system is a transparent interface between the user and the environment. The challenge is to provide assistance while keeping the listening experience as natural as possible.

With this goal in mind, Bernafon has developed an enhanced system for control of soft noise to ensure that listening is always comfortable and natural.

PERFORMANCE

Soft noises can be annoying in quiet listening environments. When amplified, sounds like the whirring of a fan can seem louder than they should, causing listening fatigue.

It is also important that the hearing instruments themselves operate quietly in very quiet environments, allowing the user to experience full relaxation.

Advanced Soft Noise Management is Bernafon's next generation in listening comfort, available for the first time in Veras instruments to decrease unwanted background sounds and make listening effortless.

The system is speech-weighted to ensure that soft speech sounds are always audible while soft noise is suppressed, making listening easy and natural.

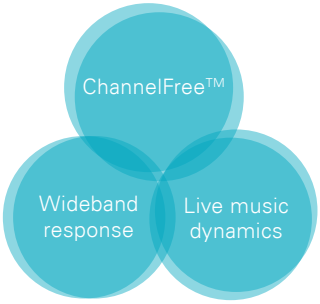
VERAS

RELAX

VERAS

ENJOY MUSIC

Music appreciation



Music lovers and musicians are often disappointed in the sound of music through their hearing instruments. Live music is especially challenging because the instruments have trouble keeping up with the wide dynamic range of music.

In Veras, **Live Music Plus** is a special program for musical sound quality. ChannelFree™ processing and wideband response are combined with live music dynamics to optimize the system for music.

Live music dynamics

The Live Music Plus program in Veras applies live music dynamics to increase the peak input limiting level, accounting for the dynamics of music. This prevents premature limiting of musical signals. As a result, music sounds natural and "alive".

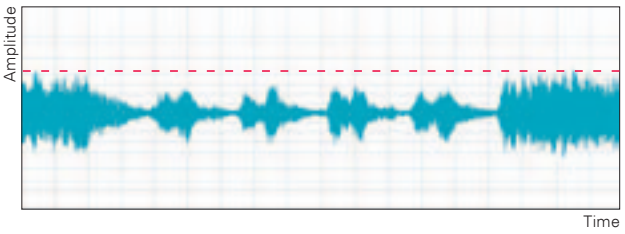
ChannelFree™ processing

ChannelFree™ is excellent for music because it treats incoming signals as a whole, maintaining the original balance between low- and high-frequency harmonic energy. This balance is crucial for musical sound quality.

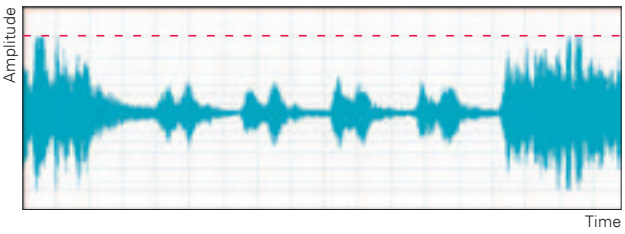
Wideband response

It is well known that a wide frequency response contributes to high fidelity. The high-frequency harmonics are important for the color, timbre and realism of musical sounds.

Amplified music signal without live music dynamics.



Amplified music signal with live music dynamics.



Chasin M. and Russo FA. 2004. Hearing aids and music. Trends in Amplif., 8(2):35–47.

VERAS

PERSONALIZE

True lifestyle fittings

Other companies talk about lifestyle but Bernafon is the only company to actually incorporate the lifestyle needs of the client directly into the fitting.

Lifestyle Profile

Bernafon's unique Lifestyle Profile is a structured interview in the fitting software that helps to quickly identify the five most important listening situations in your client's everyday life. These lifestyle priorities are used to assign programs and set the parameters of the automatic features in the hearing instrument, resulting in a truly personalized fitting.

Data logging

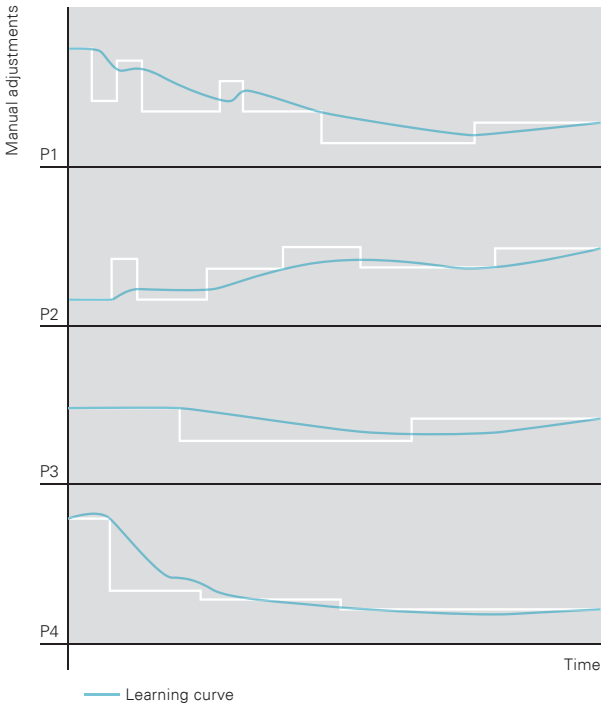
Veras offers a comprehensive data logging system that records how the client actually uses the hearing instrument in daily wear. This valuable information can help to guide fine-tuning decisions in follow-up sessions.

VC learning

Veras learns the user's preferences for volume level in each program as the client wears the instruments. The system automatically makes adjustment to its own amplification over time to match the user's preferences.

Smart VC

In Veras, the Smart VC option ensures that volume increases will never cause feedback. When increases approach the feedback curve, the system will allow the volume to rise only in frequency regions with no feedback danger.



Example showing autonomous learning of volume control adjustments: the number of adjustments decreases and the learning converges over time.

Design

Nano model

Bernafon's Nano BTE is a very small, stylish instrument that fits comfortably behind the ear. Almost invisible when worn, the Nano BTE also offers great fitting flexibility. It can be fitted with either the Spira Flex thin tube and dome system or a standard earhook with a custom earmold.

1:1

Veras BTE color range

beige | dark brown | grey brown | grey | metallic platinum | metallic anthracite | metallic beige | metallic copper | dark chrome | chrome

Architecture: Mario Botta

VERAS

DESIGN

To better hearing 1 min
Oldenegg 1h 10 min
Reusch / Talstation 2h 45 min
Gsteig 3h 30 min
Glacier 45 min
Refuge Pierredar 3h 30
Cabane Prarochet 2h 45
Via Ferrata 5 min
Col du Pillon 1h 20

Freedom of choice

Veras offers a wide range of choices in size, design, color, accessories and features. Veras BTE instruments are available in three smart designs with an attractive color range. All BTE models can be fit with Bernafon's Spira Flex thin tube and dome system (with 0.9 or 1.3 mm tubing options). They can also be fit with a conventional earhook and a custom earmold.

Veras also offers three custom ITE models, allowing flexible options for functionality, size, and local controls. All Veras ITE models are available in four discreet skin tones.

The exceptional versatility of the Veras hearing system makes it easy to find an instrument to suit every preference.

VERAS
CHOOSE

VERSATILITY

VERAS

COMMUNICATE

Wireless connectivity

Bernafon offers the latest technology for wireless communication between the hearing instruments and external sound sources. With Veras, your clients can stay connected.

SoundGate

SoundGate is a communication link between the hearing instruments and audio sources, allowing the instruments to work like wireless headphones.

With the SoundGate, Veras instruments can receive sound from sources using Bluetooth® transmission. It is also possible to plug external sound sources into the SoundGate as a direct audio input.

Advantages include:
- Hands-free cell phone connection
- Standby ready to receive calls
- Binaural reception of calls
- Remote operation of instruments

TV adapter

Bernafon offers an optional TV adapter for wireless reception of TV audio signals through the SoundGate to the Veras hearing system.

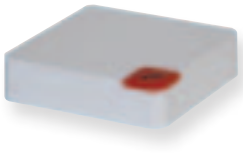
Phone adapter

An optional phone adapter is available to provide a wireless link between land-line phones, the SoundGate and Veras, to make phone use easier.

SoundGate

Bluetooth®
Easy connection between Bluetooth® equipment and Veras instruments

TV adapter
Wireless reception of TV audio



Phone adapter
Wireless link to land-line phones

Model overview

	COMPACT POWER BTE	MICRO BTE	NANO BTE	ITCD	ITC	CIC
VERAS 9 | 7 | 5						
Instrument models	•	•	•	•	•	•
HARDWARE						
Adaptive directionality	Dir	Dir	Dir	Dir	Omni	Omni
Program selector	•	•	•	○	○	
Volume control	•	•		○	○	
Spira Flex thin tube	•	•	•			
Earhook	•	•	•			
Telecoil	•	•		○	○	
Auto Telephone	•	•		•		
Battery	13	312	312	312	312	10
ACCESSORIES						
Remote control (RC-P)	○	○	○	○		
SoundGate (wireless)	○	○	○	○		
TV adapter	○	○	○	○		
Phone adapter	○	○	○	○		
DAI adapter	○	○				
FM adapter	○	○				

• standard ○ optional

ACCESSORIES

Remote control

Remote control

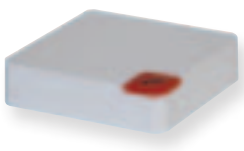
SoundGate

Wireless communication link and remote control

TV adapter

Wireless reception of TV audio

Phone adapter



Wireless link to land-line phones

Feature overview

	VERAS 9	VERAS 7	VERAS 5
PERFORMANCE			
Signal processing	ChannelFree™	ChannelFree™	ChannelFree™
Frequency bandwidth	10 kHz	10 kHz	8 kHz
BINAURAL COORDINATION			
Volume control, program change	•	•	•
Environment classification	•	•	
Feedback cancellation	•	•	
Non-telephone ear attenuation	•		
DIRECTIONALITY			
Fixed	•	•	•
Fixed omni	•	•	•
Adaptive	•	•	•
Adaptive high frequency	•		
NOISE MANAGEMENT, LISTENING COMFORT			
Wind Noise Monitor	•	•	•
Adaptive Noise Reduction	4 control states	3 control states	2 control states
Adaptive Feedback Manager/Canceller	•	•	•
Environment Optimizer	1/4	1/1	
Advanced Soft Noise Management	•	•	•
PERSONALIZATION			
Live Music Plus	•		
Program options	12	11	11
Number of program slots	4	4	3
Data logging	•	•	•
VC learning	•	•	
Smart VC	•		
WIRELESS ACCESSORIES (OPTIONAL)			
Remote control (RC-P)	○	○	○
SoundGate (wireless)	○	○	○
TV adapter	○	○	○
Phone adapter	○	○	○

• standard ○ optional

Since 1946, we have been passionate about developing quality hearing systems that enable people with hearing difficulties to enjoy authentic listening experiences. With Swiss Engineering, precision technology and our commitment to individual service we strive to exceed our customer's expectations. Our aim is to provide extra value to our partners every day. Bernafon representatives and employees in over 70 countries fulfill our vision to help people with impaired hearing communicate again without limitation.

Bernafon's photo shooting took place in Switzerland on July 13/14, 2009, in cooperation with the cable car Glacier 3000, Diablerets-Gstaad.

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Your hearing • Our passion